

Notice of Allowability

Application No.

10/756,195

Examiner

Thanhha Pham

Applicant(s)

KHOURI ET AL.

Art Unit

2813

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 03/02/06 and interview dated 05/24/06.
2. ☒ The allowed claim(s) is/are 1-8, 16-20, 22-26 and 28-38.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 3/2/06, 4/21/06
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.



5/24/06

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Robert Iannucci on 05/24/2006.

The application has been amended as follows:

- In claim 25,
 - line 6, after "having" insert – a longitudinal dimension delimited by –
 - line 9, delete "comprised" (2 occurrences)
 - line 9, after "50 nm" (2nd occurrence) insert -- , wherein the width and the height are smaller than the longitudinal dimension --

Allowable Subject Matter

2. Claims 1-8, 16-20, 22-26 and 28-38 are allowed.
3. The following is an examiner's statement of reasons for allowance:
 - Recorded Prior Art fails to disclose or suggest the combination structure of an electronic semiconductor device as recited in the base claim 1 including a contact structure in said dielectric layer, said contact structure comprising a first conducting region and a second conducting region, said second conducting region being of chalcogenic material and being electrically contact with said first conducting region

Art Unit: 2813

wherein said first conducting region has a longitudinal dimension delimited by an end face extending transversely to said upper surface and the longitudinal dimension and contacting said second conducting region at a contact surface, the end face having width and height dimensions that are smaller than the longitudinal dimension.

► Recorded Prior Art fails to disclose or suggest the combination structure of an electronic PCM device as recited in the base claim 16 including a PCM memory cell that includes a PCM storage element formed in the dielectric layer and a selection element, the storage element being formed by a heater element and a storage region, the storage region being of chalcogenic material and being in electric contact with the heater element, wherein the heater element has an end face extending transversely to the lower surface and forming a contact area with the storage region, wherein the selection element is formed in the body, a lower electrode extends in the dielectric layer between the selection element and the heater element and an upper electrode extends in the dielectric layer on the storage region and forms a bit line.

► Recorded Prior Art fails to disclose or suggest the combination structure of an electronic semiconductor device as recited in the base claim 25 including a contact structure positioned at least partially in the dielectric layer and including a first conducting region and a second conducting region, said second conducting region being of chalcogenic material, the first conducting region having a longitudinal dimension delimited by a contact surface that contacts the second conducting region and extends transversely to the upper surface, wherein the contact surface has a generally rectangular shape having a height and a width, wherein the height is between

Art Unit: 2813

5 nm and 50 nm and the width is between 5 nm and 50 nm, wherein the width and the height are smaller than the longitudinal dimension.

► Recorded Prior Art fails to disclose or suggest the combination structure of an electronic semiconductor device as recited in the base claim 31 including a contact structure in the dielectric layer, the contact structure comprising a first conducting region and a second conducting region, the second conducting region being of chalcogenic material and being electrically contact with said first conducting region wherein the first conducting region has a longitudinal dimension delimited by an end face extending transversely to said upper surface and contacting a side wall of the second conducting region, the end face having a width smaller than a corresponding width of the side wall of the second conducting region and a height smaller than a corresponding height of the side wall of the second conducting region.

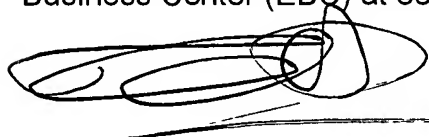
4. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanhha Pham whose telephone number is (571) 272-1696. The examiner can normally be reached on Monday and Thursday 9:00AM - 9:30PM.

Art Unit: 2813

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to be 'Thanhha Pham', with a horizontal line drawn underneath it.

Thanhha Pham